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Tel. ST 3-8000
Ext. 307

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Remarks Prepared by Lewis L. Strauss, Chairman
U. S. Atomic Energy Commission
for delivery to
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It is a pleasure to be here today and to participate in this discussion of the planning and the problems of civil defense. It is a particular pleasure since it affords me an opportunity to pay my sincere respect to the men and women of our Civil Defense organization -- at all levels -- for the public-spirited work they are doing under very considerable difficulties. Not the least of these difficulties -- and no doubt the most discouraging -- is the apparent apathy with which their efforts are received by large segments of the public. I need not tell you that the organization is composed of devoted, patriotic citizens performing one of the most essential tasks confronting our nation. Many of them work tirelessly, without pay, long hours after their regular labors are done, and with few thanks from their fellow-citizens. I would respectfully salute you all, from the neighborhood wardens to the officials of the national headquarters.

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I am happy also to be here today with our friends from Canada with whom we, in the Atomic Energy Commission, enjoy an enduring and highly important cooperation for the defense of our common security and freedom. That friendship and joint effort, whether it finds us united in time of peril or working together for peaceful progress, is one of the most reliable of all the bulwarks of the free world. It is an alliance, not of politics and diplomacy, but of the hand and the heart. It rests, not so much upon covenants and treaties, as upon the common ideals and the moral identity of two friendly neighbors.

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I shall not attempt to discuss with you this afternoon any of the technical characteristics of the effects of nuclear weapons, or the extent of the calamity which would befall exposed populations if -- God forbid -- such weapons should ever be used in all-out warfare. I am not a scientist, and I would not presume therefore to present a technical treatise. I recognize among those on your program many specialists who are qualified to speak on those matters.

However, there is one aspect of this general subject of Civil Defense which I should like to mention, since it involves a problem common to all our efforts. It is a problem which, on occasion, the Atomic Energy Commission has encountered in its program of promoting the peaceful uses of atomic energy. I know, too, that it also lies at the root of many of the difficulties which impede your efforts to give the public an understanding of the nature of nuclear war and what the effects of such a war might be upon civilian populations.

It can probably be best and briefly described as an educational problem.

Nuclear energy -- within the brief span of eleven years, commencing as a secret and remote subject --

has become one of intimate concern to every individual. It has an ever-widening influence on our daily living, our well-being -- perhaps even on our destiny. With each passing day, the energy that is bound up in the invisible nucleus of the atom comes to be a more potent force in our environment. The discovery of nuclear energy, like every invention of man's ingenuity, has brought to us both promises and problems. Thus, the words "nuclear energy" have many interpretations. As they bring to mind the terrifying spectre of a war of exploding A-bombs and H-bombs, they are horrible words. Yet those same words, used to describe the many uses of the atom for man's peaceful progress -- in medicine, agriculture, biology, industry and the production of electric power -- bear no relation of association to the uncontrolled fury of the atom as it might be employed in war. And finally, the words "nuclear energy" as they relate to the controlled testing of nuclear weapons so that we may be assured of the means of defending ourselves, ought not to be confused with the unrestrained use of large numbers of such weapons in actual warfare.

Despite all efforts to the contrary, there is still confusion in the minds of many people as to the differing and even contradictory meanings of the words "nuclear energy".

I am sure that all of you have encountered, in your civil defense work, a rather widespread misunderstanding of the significance of such words as "fallout" and "radioactivity." There is a disposition among some persons to think of what might happen in event of a nuclear attack upon us in terms of what does happen when we test nuclear weapons under strictly controlled conditions affording maximum safety. There also is lack of understanding as to the true meaning of such phrases as "permissible dose levels" as applied to peacetime activities in the field of atomic energy. There is a tendency to regard these peacetime safety standards as being the limits for survival in event of actual attack. Sensational and oftentimes irresponsible articles have no doubt contributed to this confusion.

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For example, the public reads lurid pieces about biological hazards from radiation following tests, and is led to believe that the greatest hazard that we face in the world today is an estimated or supposed danger to future generations, resulting from exposure to radioactivity. Rarely, if ever, do these articles compare such problematical dangers to the other hazards of living and the menaces to survival in this modern world.

Exposure to radioactivity, as a vague, unproven danger to generations yet unborn, must be weighed against the more immediate and infinitely greater dangers of defeat and perhaps of obliteration at the hands of an enemy who possesses nuclear weapons of mass destruction and who might have no compunction about using such weapons if he thought we were too weak to defend ourselves and retaliate in kind.

As a peace-loving people, and as members of the world community of peoples, we recognize clearly that science has raced ahead of man's readiness to deal with all the complexities of what science has created. With the advent of nuclear weapons, war has ceased to offer a solution for disputes among nations. War has become, not only out-of-date, but senseless. That is why President Eisenhower has dedicated himself with all his heart and mind to seeking agreement among the nations on a system that will lift from mankind the twin burdens of fear and armament. He has assumed leadership among the leaders of the world in pointing the way toward that goal. Despite the many difficulties and frustrations, he perserveres in working for peace. He says he means to continue to do so.

Until a system of comprehensive disarmament is achieved -- based on something more reliable than dramatic gestures and mere promises made by nations which have repeatedly violated their solemn commitments -- our national survival and the security of our homes requires that we have -- <u>in being</u> -- the means of defending ourselves against sudden nuclear attack. There is no other prudent course. Without the ability to defend ourselves, we could not hope to deter an enemy from making war upon us, or to retaliate effectively and decisively once we were

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under attack. And without that strength, we would have to speak in a small and deferential voice in our efforts to build the foundations of a durable peace. Only so long as we are strong can we negotiate; the weak can only submit.

Until others in the world come to their senses, and join with us in banishing the awful spectre of nuclear war, we must be strong; we must have weapons fully as modern and as effective -- if possible more effective -- than the weapons which we know to be in possession of others who would destroy our way of life. At the same time, we must do all in our power to ensure the survival of the largest possible numbers of our population if war should be forced upon us. A major part of this latter effort is, of course, the responsibility of you who are engaged in civil defense.

Our civil defense efforts, as I mentioned a moment ago, have been faced with many difficult problems. These problems will continue and no doubt increase.

As other nations develop and produce nuclear weapons of still greater efficiency and more destructive capabilities, our current planning for civil defense continuously requires revision lest it become outmoded. If we assume that an enemy can deliver an appreciable fraction of the weapons which we believe he can produce, the delivered cost of any one of those weapons may be almost insignificant compared with its potential damage. Also, an enemy is probably in a position to increase his destructive power of attack faster than we can hope to provide new and better civil defense measures to combat that increase. Civil defense, however efficiently organized it may be, simply cannot expect to keep ahead of the enemy's growing stockpile of more destructive, more diversified and presumably more effective nuclear weapons. This is not a reassuring thought; I am deeply aware of that. But unless we are willing to be realists, our planning will be useless. Our people must not only be well-informed, but we must -- as a nation -- face the facts.

There are those who, after hearing of the probable results of a nuclear attack, throw up their

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hands and groan, "Oh, what's the use." The cost of providing bomb shelters adequate for the protection of all our city dwellers against high-yield nuclear weapons would be staggering. Attempted mass evacuation under less than ideal circumstances might prove to be disastrous in actual war. The dispersal of populations, besides being almost prohibitive in cost, might be found to offer no additional protection against radioactive fallout.

Yet the prospects of survival, grim though they may be, are not so discouraging as they may appear. There are many things which can be done, and are being done under the guidance of the Federal Civil Defense Administration, to minimize casualties and the disruption of civilian services in the event of nuclear attack.

Survival in such an unhappy eventuality would depend largely on what prior precautions had been taken by individuals and families for their own safety, in line with the recommendations of the civil defense authorities. This, I believe, is a point so important that you cannot over-stress it to the American people. I stress "prior precautions" because post-attack measures may be too late.

The Government, regardless of the extent of its planning or of how many billions of dollars it might spend on civil defense, cannot assume responsibility for the safety of its individual citizens after the bombs or missiles have started falling. At that point, survival will depend largely on how well we have learned the lessons of civil defense, as individuals and families -- to what extent we have prepared home shelters, stocked emergency supplies and acquainted ourselves with decontamination procedures. It will depend also on how well we understand the problems of the lingering dangers of fallout. If a nuclear attack should be made upon us, the decision of life or death -- for the individual -- may have long since been made by him, in indifference or in healthy solicitude.

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In order to provide our people with the guidance and instruction which may later save their lives, the civil defense authorities need constant access to new and up-to-date information about the effects of nuclear weapons of all types and sizes. This data relating to blast, heat and radiation effects must be interpreted and translated in terms of survival requirements.

Thus, it can be seen that civil defense cannot be a static program. Its requirements are constantly changing. As new and improved weapons are added to the world's nuclear arsenals, new information essential to our safety is acquired.

The only source of this data so necessary to civil defense planning is the actual testing of nuclear weapons. We cannot, of course, obtain any reliable, first-hand information as to the effects of enemy weapons -- those particular weapons which, in the event of war, would be directed against our homes and cities. Soviet Russia conducts her nuclear tests in secrecy and in callous disregard for world opinion. Meanwhile, she has for years laid down a world-wide propaganda barrage against our tests. The barrage has had some effect too.

The Communists -- in sharp contrast to our policy and our practice -- refuse to divulge any information from their tests which might help other nations in protecting their people against the horrors of nuclear war. If they do this for their satellites, it is a program conducted in secret.

Thus, it becomes apparent that the survival of our own people and the civilian populations of the entire free world largely depends, from the civil defense viewpoint, on information which is derived from our own carefully-controlled nuclear tests.

Without such tests -- in the existing world climate, and in the absence of disarmament based on proper safeguards -- progress in civil defense planning throughout the free world would be dangerously curtailed, if not brought to a standstill. We would

steadily become more and more vulnerable to surprise attack; we would soon be depending upon antiquated methods of protecting ourselves. Our defenses would deteriorate -- both in terms of civil defense, and in the weapons which we need to repel any nuclear aggression.

Our weapons tests are not conducted in order that we may develop and stockpile weapons of ever greater destructive force. As President Eisenhower has stated, we do not test merely to make larger and yet ever larger weapons.

Our tests are equally for the purpose of strengthening our defenses against nuclear attack by others.

Our most recent test series at the Eniwetok Proving Grounds in the remote Pacific -- called Operation Redwing -- placed heavy stress on the development of defensive weapons, including nuclear warheads for missiles which would be used against enemy attacks by land, sea or air. The largest weapon tested in this series was substantially smaller in yield than the maximum test of the previous 1954 series.

As a result of the recent Pacific tests we now know that we can produce weapons of megaton-range with a greatly reduced amount of radioactive fallout for a given release of explosive energy. In other words, we have begun to make weapons which reduce widespread fallout to a minimum, while their destructive effect is concentrated against the military objective. We are paying close attention to this matter of fallout, and it is only through the testing of high-yield weapons that we can continue these efforts.

As for the information which is so essential to the organization of up-to-date civil defense, such data can be obtained only from the testing of high-yield nuclear weapons. There is no other way. You cannot test small explosives against model structures and reliably extrapolate to large explosions and full scale

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buildings and installations. We would suppose that, in the event of war, our cities would be attacked -- not with A-bombs of relatively small energy yield -- but with thermonuclear weapons in the megaton range. If we are to have any reliable knowledge of the effects of such large weapons on which to base our plans for survival, that knowledge can come only from our own test program.

It is for this reason that the Atomic Energy Commission works in close cooperation with the Federal Civil Defense Administration; why, in fact, the FCDA is an integral part of our test organization and has been given an important voice in the conduct of all tests.

The test series held in the early part of 1955 at the Commission's Nevada Proving Ground was largely devoted to providing information needed by civil defense. The final reports on the civil effects of that series are now being issued, and a great body of the information is available, not only to civil defense authorities, but to the general public. Since 1950, the Atomic Energy Commission and the Department of Defense have been providing such information and it has become basic to our civilian defense planning. You may be interested to know that the handbook "The Effects of Atomic Weapons" which was issued in June, 1950, is being revised to include the most up-to-date knowledge -- particularly as it relates to the effects of high-yield thermonuclear weapons. We hope that it will be available early this coming year.

At this year's REDWING test series in the Pacific, the Federal Civil Defense Administration was represented on the staff of the Joint Task Force Command throughout that operation. The FCDA was kept fully and currently informed.

In addition, I had the pleasure -- on behalf of the Commission and the Department of Defense -- of inviting 17 special representatives of the FCDA to visit the Eniwetok Proving Grounds where they observed a couple of the detonations.

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The Atomic Energy Commission also has expanded its scientific and technical assistance by the addition of consultant services to assist in civil defense matters. For example, the health and safety laboratories of our New York headquarters are helping the FCDA to develop specifications and to obtain equipment for aerial monitoring of radiation. The feasibility of this technique is a direct outgrowth of information gained from the 1955 weapons tests in Nevada.

Within the continental United States, there has been established a network of 39 radiation monitoring stations, operated by the AEC and the Public Health Service, and some 70 additional monitoring stations are located in other areas around the world. These form an essential part of our civil defense organization.

As I mentioned at the beginning of my remarks, the world greatly fears a nuclear war; people are terrified at the thought of the widespread contamination of the air and soil by radioactivity if nuclear war should be inflicted upon us. I do not seek to minimize those horrors of nuclear war; there is every reason to regard them with dread.

Yet we must not confuse the eventuality of radioactive fallout resulting from the wholesale use of such weapons in war, with the conditions that exist under carefully-controlled testing, conducted far from any civilian centers of population.

The most distinguished scientific body in the United States -- the National Academy of Sciences -- recently completed an exhaustive study of the biological effect of fallout from all weapons tests, everywhere in the world.

It found (and I'm quoting directly from its report now): "Thus far the biological damage from peacetime activities (including the testing of atomic weapons) has been essentially negligible."

The National Academy's report went on to state: "Fallout from weapons testing has so far led to considerably

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less irradiation of the population than have the medical uses, and has therefore been less detrimental."

And finally, the National Academy reported that radiation exposure from all tests to date, and from future tests at the same rate as in the past, would be a small fraction of the exposure one receives in daily living.

What it comes down to is simply this:

Our testing program is not "poisoning" the atmosphere. Soviet propagandists have been spreading that "scare" for months, while conveniently neglecting to mention their own secret tests.

Nuclear testing, at the present rate, may safely be continued for as far as one can see ahead. This is the conclusion reached by our foremost and most reliable scientists.

To remain free, we must have the means of defending ourselves against surprise attack, and we must know how best to protect the lives of our civilians. To do this, we must develop modern weapons which are at least as powerful as those in possession of those who threaten us.

Only through our obvious strength can we deter the recklessness of others.

Until such time as there exists an effective international agreement safeguarded by adequate inspection to limit or control armaments, the United States has no safe course but to maintain the most modern and efficient military strength in the interests of peace.

The survival of our people -- and the work of you who are charged with protecting the lives of our people -- demands such prudence.

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